
Digital Nebraska

Envisioning Our Future

Nebraska's Statewide Technology Plan

2005-2006

Version 2.0

Nebraska Information Technology Commission



Network Nebraska

Objective

The primary objective of this initiative is to develop a broadband, scalable telecommunications infrastructure that optimizes the quality of service to every public entity in the State of Nebraska. Network Nebraska aggregates disparate networks into a multipurpose core backbone extending from Norfolk, Omaha, Lincoln, Grand Island, Kearney, and North Platte to the Panhandle. The State of Nebraska, Division of Communications, the University of Nebraska, Nebraska Educational Telecommunications Commission, Department of Education, Public Service Commission, and the Nebraska Information Technology Commission have formed the Collaborative Aggregation Partnership (CAP) to guide and implement Network Nebraska. The next phase of this initiative is to formalize business relationships and agreements and to enhance rural bandwidth through local aggregation.

Through aggregation of demand, adoption of common standards, and collaboration with network services and applications, Network Nebraska participants can achieve many benefits.

Description

The major components of this initiative include:

- Development of a scalable, reliable, and secure telecommunications infrastructure that enables any type of eligible entity (i.e., local and state government, K-12 and higher education, health care institutions) to purchase the amount of service that the entities need, when they need it, on an annual basis;
- Establishment of a catalog of value-added applications that enables eligible entities to pick and choose services that are pertinent to them (e.g., Internet1, Internet2, and videoconferencing);
- Implementation of a network operations center that offers a helpdesk, network diagnostics, and engineering assistance in order to ensure acceptable qualities of service;
- Establishment of a billing or accounting center to accept service orders, extend service agreements, provide consolidated billing, and to maintain customer accounts.

Benefits

Through aggregation of demand, adoption of common standards, and collaboration with network services and applications, participants can achieve many benefits, including:

- Lower network costs;
- Greater efficiency for participating entities;
- Interoperability of systems providing video courses and conferencing;

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- Increased collaboration among all K-20 educational entities;
- New educational opportunities;
- Competitiveness with surrounding states; and
- Better use of public investments.

Action Plan

Current Action Items

1. Identify Tier II communities that offer opportunities for aggregation for services onto the network.

Action: The CAP will identify and work with communities that express an interest in aggregating their public sector transport.

Lead: Network Nebraska (CAP)

Participating Entities: Specific communities, NITC Community Council, Nebraska League of Municipalities, Nebraska Association of County Officials, public libraries, NITC Education Council

Timeframe: February 2006-December 2006

Funding: No funding required for this action item.

Status: New

Action: The CAP will write and release a brief that explains the technical feasibility of sharing public sector transport over high bandwidth, IP-based circuits in order to incentivize Tier II aggregation.

Lead: Network Nebraska (CAP)

Participating Entities: NITC Education Council, NITC Community Council, ESU-NOC, Nebraska League of Municipalities, Nebraska Association of County Officials, public libraries

Timeframe: February 2006-December 2006

Funding: No funding required for this action item.

Status: New

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2. The Chief Information Officer will arrange for all eligible network participants to have the opportunity to access Network Nebraska at the earliest available opportunity.

Action: The Chief Information Officer will establish criteria for “access to” Network Nebraska in order to satisfy the requirements of LB 1208.

Lead: Chief Information Officer

Participating Entities: Network Nebraska (CAP)

Timeframe: February 2006

Funding: No funding required for this action item.

Status: New

Action: The Chief Information Officer will determine the specifications of any regional aggregation centers that must be established in order to serve the statewide data traffic of K-12 and postsecondary education institutions.

Lead: Chief Information Officer

Participating Entities: Network Nebraska (CAP)

Timeframe: February 2006-April 2006

Funding: No funding required for this action item.

Status: New

3. Offer Internet I services to eligible network participants.

Action: The CAP will accept new orders for Internet service and continue to aggregate purchasing demand to secure a more economical price for statewide Internet service.

Lead: Network Nebraska (CAP)

Participating Entities: NITC Education Council, NITC Community Council

Timeframe: February 2006-December 2006

Funding: No funding required for this action item.

Status: Continuation

Network Nebraska

4. Meet with the Technical Subcommittee of the Nebraska Statewide Telehealth Network to discuss issues related to network administration, scheduling and management.

Action: The Collaborative Aggregation Partnership will conduct ongoing discussions with the Technical Committee of the Nebraska Statewide Telehealth Network.

Lead: Network Nebraska (CAP)

Participating Entities: Nebraska Telehealth Network Technical Subcommittee, NITC Technical Panel

Timeframe: February 2006-December 2006

Funding: No funding required for this action item.

Status: Continuation

5. Implement a cost and funding model to allow shared use of the statewide backbone for data transport.

Action: Develop an equitable cost and funding model that takes into account the number of participating entities, student populations, and the cost for transport and ongoing aggregation services.

Lead: Network Nebraska (CAP)

Participating Entities: Network customers

Timeframe: March 2006-June 2006

Funding: Funding determined by LB 1208

Status: New

Network Nebraska

6. Convene a work group to use high bandwidth flexible use circuits as community aggregation points and create a statewide, high bandwidth digital content delivery system using satellite, terrestrial and wireless technology.

Lead: Office of the NITC

Participating Entities: Technical Panel, Community Council, Education Council, State Government Council

Timeframe: March 2006-June 2006

Funding: No funding is required for this collaborative action item.

Status: New

Future Action Items

1. Develop a three-phase (2007-09) upgrade plan for statewide backbone transport that includes the demand created by the upgrade of K-12 districts and colleges converting to IP networking.
2. Investigate the feasibility of offering advanced network services to Network Nebraska customers.

Completed Action Items (2004-2005)

1. Created a Service Level Agreement for use by CAP and the eligible network participants.
2. Created a Network Nebraska Level 1 Helpdesk at 888-NET-NEBR (888-638-6327).
3. Created a Network Nebraska Web site (www.networknebraska.net).

Statewide Synchronous Video Network

Objective

The primary objective of this initiative is to establish an Internet Protocol-based network that will interconnect all existing and future distance learning and videoconferencing facilities in the State of Nebraska. Nebraska currently has approximately 300 high school distance learning classrooms, 30 higher education distance learning classrooms, over 50 state agency videoconferencing rooms, and (soon-to-be) over 60 videoconferencing facilities for telehealth in local and regional hospitals. More growth and proliferation of distance learning and videoconferencing equipment and sites is expected in the near future. These 400+ interactive video facilities currently utilize a variety of video standards and bandwidth speeds that prevent interconnection between sub-networks. The Statewide Synchronous Video Network, as envisioned, would use compatible audio and video standards to enable any classroom or facility to connect with any other classroom or facility or to connect with multiple sites simultaneously.

Description

The major components of this initiative include:

- A single, interconnected synchronous video network with various levels of authorization and traffic prioritization;
- An event clearinghouse and scheduling system that would allow registration for interactive video events;
- Development of a network bandwidth management system or network operations center that assures pre-determined qualities of service, depending upon the type of video traffic.

Benefits

Interactive videoconferencing and distance learning developed rapidly across Nebraska in the 1990's. Prior to recognized video standards or a coordinating body, entities were free to adopt any equipment, standard, or system that met their needs. Little thought was paid to interconnectivity or compatibility. Consequently, Nebraska became a state of disparate, redundant systems that prevented multi-jurisdictional collaboration or maximization of educational opportunities outside of a particular geographic boundary or system.

The enterprise benefits of an interconnected video system include:

- Greater sharing of educational courses, events, and training across sub-network boundaries, irrespective of geography;

The Statewide Synchronous Video Network would use compatible audio and video standards to enable any classroom or facility to connect with any other classroom or facility or to connect with multiple sites.

Statewide Synchronous Video Network



- More efficient use of available resources—more classrooms and sites are available within less distance of the user at more convenient times;
- One-to-many videoconferencing capabilities for news alerts, bioterrorism alerts, or other emergency uses;
- Collaborative development across various service agencies (i.e., medical services to schools, and adult and continuing education opportunities).

Action Plan

Current Action Items

1. Acquisition of upgrade or replacement equipment and/or software that ensures compliance with the audio and video standard.

Action: The Chief Information Officer will determine the list of biddable hardware and software items related to distance education for purposes of enhancing distance education according to LB 1208.

Lead: Chief Information Officer

Participating Entities: NITC Technical Panel, DAS-DOC, ESU-NOC

Timeframe: March 2006-April 2006

Funding: No funding required for this action item

Status: New

Action: The Chief Information Officer will bid for equipment (hardware and software) related to distance education, which meets at least minimum standards as set by the Nebraska Information Technology Commission for all eligible network participants who want to participate in statewide leasing and/or purchasing contracts.

Lead: Chief Information Officer

Participating Entities: DAS-DOC, DAS Purchasing

Timeframe: March 2006-May 2006

Funding: Determined by the Legislature through LB 1208

Status: New

Statewide Synchronous Video Network

Action: The Chief Information Officer will designate a fiscal entity or entities to oversee ordering, delivery and installation of distance learning equipment.

Lead: Chief Information Officer

Participating Entities: To be named.

Timeframe: March 2006-August 2006

Funding: Determined by the Legislature through LB 1208

Status: Continuation

2. Development or purchase of a scheduling system or enterprise resource management program that allows potential users to know the location and availability of resources, and/or set up or reserve ad hoc or regularly scheduled events with other entities.

Action: Research scheduling systems and enterprise resource management programs.

Lead: NITC Technical Panel's Statewide Synchronous Video Work Group

Participating Entities: NET, NDE, NITC staff

Timeframe: February 2006

Funding: No funding required for this task.

Status: Continuation

Action: The Nebraska Information Technology Commission shall establish standards or bid specifications related to synchronous video scheduling software or scheduling services.

Lead: NITC Technical Panel

Participating Entities: NITC Technical Panel's Statewide Synchronous Video Work Group

Timeframe: February 2006-April 2006

Funding: No funding required for this task.

Status: New

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Action: Purchase or develop a scheduling system and/or enterprise resource management program.

Lead: Distance Education Council for K-12; each agency for their respective purchases.

Participating Entities: Network Nebraska (CAP)

Timeframe: Summer, 2006

Funding: To be determined by LB 1208.

Status: Continuation

3. Implement a network bandwidth management system or network operations center that assures pre-determined qualities of service, depending upon the type of data traffic.

Action: Implement a network operations center that assures particular qualities of service.

Lead: Network Nebraska (CAP)

Participating Entities: Network Nebraska customers

Timeframe: April 2006 –July 2006

Funding: To be determined.

Status: Continuation

4. Develop an event clearinghouse that allows promotion, marketing, and registration for interactive video events.

Action: Develop a web-based clearinghouse that allows originators to post events and users to register for or view the date, time and frequency of individual events.

Lead: ESU Distance Education Council

Participating Entities: NITC Technical Panel's Statewide Synchronous Video Network Work Group, NITC Education Council

Timeframe: April – July, 2006

Funding: To be determined by LB 1208.

Status: Continuation

Statewide Synchronous Video Network

5. Develop a cost and funding algorithm to allow shared use of the statewide backbone for interstate distance learning and videoconferencing.

Action: Research models from other States' education networks.

Lead: Network Nebraska (CAP)

Participating Entities: NITC Technical Panel's Statewide Synchronous Video Work Group

Timeframe: Ongoing

Funding: No funding required for this task.

Status: Continuation

6. Examine policy implications of the use of shared network assets.

Action: Convene a workgroup to examine policy implications of the use of shared network assets.

Lead: Office of the NITC

Participating Entities: NITC Technical Panel, State Government Council, Education Council, Community Council

Timeframe: Ongoing

Funding: No funding is required for this collaborative action item

Status: New

Future Action Items

1. Develop a three-phase (2007-09) equipment and transport upgrade plan for synchronous video distance learning that affects a majority of the network users.

Completed Action Items

1. Identified a single audio and video standard for low-bandwidth distance learning and videoconferencing.

Digital Education



Objective

The primary objective of the Digital Education Initiative is to promote the effective and efficient integration of technology into the instructional, learning, and administrative processes and to utilize technology to deliver enhanced digital educational opportunities to students at all levels throughout Nebraska on an equitable and affordable basis.

This initiative will involve the coordination and promotion of several major systems and applications that heretofore have either been developed mostly at the local level or have not been replicated statewide.

The initiative will be dependent upon adequate Internet connectivity and transport bandwidth for learners, instructors, administrators, and for educational attendance sites. A minimum acceptable level of classroom technology will have to be established for the initiative to be successful.

Description

The Digital Education Initiative will recognize that many standalone and disparate software applications are needing to undergo integration and convergence so that an instructor can: 1) research digital content, 2) construct a lesson or unit on a computer in a series of virtual or face-to-face or videoconferencing activities using rich multimedia, 3) assess the learners electronically, and then 4) move the student data to a database or data warehouse, 5) export relevant achievement and attendance data to a web-based student information system so parents, or the students themselves, can view it from home; 6) export data to a statewide student information system; and then finally 7) make “real-time” instructional decisions based upon the recently documented progress of the learners.

The primary components of the Digital Education Initiative would include:

- A statewide telecommunications network capable of transporting voice, video, and data between and among all education entities [see Network Nebraska];
- Ample bandwidth for local and regional transport to accommodate present and future education technology applications [see Statewide Synchronous Video Network];
- Distance insensitive Internet pricing for all Nebraska education entities;
- Development of a statewide eLearning environment so that every teacher and every learner has access to a web-based, digital curriculum;
- Development of a statewide digital resource library so that any teacher or learner will be able to retrieve digital media for use in instructional and student projects;

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- Synchronous videoconferencing interconnections between all schools and colleges [see Statewide Synchronous Video Network];
- The means to coordinate and facilitate essential education opportunities for all students through a statewide student information system; and
- Regional PreK-20 education cooperatives that vertically articulate educational programs and opportunities.

Benefits

Establishing a Digital Education Initiative is critical to Nebraska's future. Internet has gone from a "nice to have" educational application of the 1990's to the "must have" mission critical application of the 2000's. So much of what teachers, students, and administrators do today is tied to Internet-based information and communication. Nebraska's ranking of 6.5 students per Internet-connected computer in the classroom seems to compare favorably with the U.S. average of 8.0 students per Internet-connected computer. (Technology Counts 2005 Report) However, it still makes it challenging for students to complete their digital assignments when they are expected to share six or seven students to a computer.

The benefits of the Digital Education Initiative would include:

- Greater technical capacity for schools and colleges to meet the increasing demands of a more diverse customer base;
- More equitable Internet access for Nebraska schools and colleges that is not dependent upon distance-sensitive pricing;
- A comprehensive Web-based approach to curriculum mapping and organization and automation of student assessment data gathering and depiction;
- The availability of rich, digital media to the desktop that is indexed to Nebraska standards, catalogued, and searchable by the educator or student;
- A more systematic approach to synchronous video distance learning that enables Nebraska schools and colleges to exchange more courses, staff development and training, and ad hoc learning opportunities.

Each of the components of the Digital Education Initiative are vital to future student success in Nebraska. The components are especially pertinent in that these applications and services provide the foundation for capacity building in our schools and colleges.

The Digital Education Initiative will promote the effective and efficient integration of technology into the instructional, learning, and administrative processes and to utilize technology to deliver enhanced digital educational opportunities to students.

Digital Education



Action Plan

Current Action Items

1. **Establish standards related to the procurement and use of learning management systems by K-12 schools.**

Lead: NITC Technical Panel

Participating Entities: NITC Education Council, myeLearning.org, ESU Distance Education Council, UNL Independent Study High School

Timeframe: March 2006 – May 2006

Funding: No funding is required for this action item.

Status: New. Required by LB 1208.

2. **Promote the availability, distribution, and use of digital media throughout the Nebraska educational community.**

Lead: NITC Education Council

Participating Entities: NITC Education Council

Timeframe: March 2006 – December 2006

Funding: No funding is required for this action item.

Status: New

Completed Action Items (2004-2005)

1. Organized a series of October 2004 Planning Workshops to bring together participants who have a stake in improving educational and training opportunities for Nebraska citizens through eLearning.

Advisory Group Members



Education Council

Dr. Jack Huck, Co-Chair, Southeast Community College

Alan Wibbels, Co-Chair, ESU 10

Arnold Bateman, University of Nebraska-Lincoln

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Dr. Michael Chipps, Mid-Plains Community College

Dr. Terry Haack, Elkhorn High School

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